Corrosion Under Insulation

Sherwin-Williams pioneered coatings for under insulation applications in 1999 with the introduction of Epo-Phen FF, a phenolic novolac epoxy. In 2004 we continued to expand our solution driven technologies by supplying an inert multi-polymeric matrix coating. Today, with the launch of the next generation CUI coating Heat-Flex® Hi-Temp 1200, we’re taking the next step.

Now the industry has access to the best in a CUI coating, delivering improved heat resistance, enhanced durability during transportation, improved flexibility and faster dry to touch.

Corrosion Under Insulation (CUI) is one of the costliest problems facing the industry today. Major equipment outages, whether for periodic inspection and maintenance or due to a catastrophic failure, account for more operational disruption than any other cause. Industry standards governing the current technology and best industry practices for mitigating CUI were revised and became effective in 2011.

NACE Standard SP0198-2010, “The Control of Corrosion Under Thermal Insulation and Fireproofing Materials – A Systems Approach,” recognizes the changes that have occurred in the temperatures of hydrocarbon processing operations over the past decade or so – changes that demand the highest-performing products for these applications. This same standard holds that immersion-grade epoxy systems are a suitable defense against infiltration by outside moisture or from the process environment itself through seams, gaps or other discontinuities in steel under insulation.

With the introduction of Heat Flex® Hi-Temp 1200, Sherwin-Williams now offers the oil and gas industry the highest performing product portfolio in this corrosive environment.
Heat-Flex® Hi-Temp 1200

For Corrosion Under Insulation

Sherwin-Williams Heat-Flex® Hi-Temp 1200 is a single-component coating that consistently outperforms alternatives in rigorous testing protocols for resistance to heat, corrosion and thermal shock. Tests prove how the coating performs in service, but just as importantly, speak to its durability during transportation and erection of shop fabricated modules.

From corrosion resistance to extended lifecycles to faster dry times which save on production costs, our continuing leadership and investment in research and development ensures the products you receive meet the standard of quality you have come to trust.

Improved Corrosion Resistance, Lower Lifecycle Cost

**Boiling Water Test**
Performance in accelerated test protocols shows Heat-Flex® Hi-Temp 1200 outperformed competitor's products with no adhesion loss and no blistering exhibited after 80 cycles of the boiling water test when applied at ambient temperatures. Recognized as the gold standard for accelerated testing of heat-resistant coatings, this test method, developed by a major oil company's in-house lab to qualify CUI coatings used at their own facilities, measures a coating's performance subjected to thermal shock in a simulated immersion scenario.

**Test Method**
Process starts by applying two coats to hot steel at 500°F (260°C) and held at a constant 400°F (204°C) for 16 hours. Panels are then submerged into room temperature water and examined for signs of failure. After review, the panels are placed in a water bath, maintained at 210°F (99°C) for eight hours, then rated according to ASTM D714, Standard Test Method for Evaluating Degree of Blistering of Paints, an ASTM D610, Standard Test Method for Evaluating Rusting on Painted Steel Surfaces. The panels are put through the same process for a total of 80 cycles.

**BOILING WATER TEST RESULT**
- Heat Flex® Hi-Temp 1200, due in part to increased flexibility, out-performed the competitor’s product with better corrosion resistance, no adhesion loss and no blistering being exhibited after 80 cycles.

**Corrosion Under Insulation Test**
Heat-Flex® Hi-Temp 1200 was subjected to a rigorous CUI testing protocol developed by Sherwin-Williams’ industry recognized R&D lab to gauge the coating’s performance in real world scenarios involving typical CUI mechanisms as recognized in NACE Standard SP0198-2010.

**Test Method**
The testing process starts by applying two coats to hot steel at 500°F (260°C), then allowing the panels to cool for one hour. The coated panels are then placed between acidic and alkaline thermal insulation, along with an uncoated panel for a baseline comparison, in an oven at 350°F (176°C) for seven days. The insulation is saturated with tap water and placed in an oven maintained at 150°F (65°C) to accelerate the corrosion mechanism, and held for seven days, adding water as needed to maintain saturation. After this first cycle, panels were rated for rust and blistering, and a total of six cycles were completed over 12 weeks. Heat-Flex® Hi-Temp 1200 passed with no loss of adhesion, and received #10 ratings for rusting and blistering, the highest possible rating under ASTM D714 and D610, which outperformed competitor products.

**CUI TEST RESULT**
- No loss of adhesion, excellent ratings for rust and blistering.
Durability in Transit from Shop to Field

Sherwin-Williams acknowledges the steel fabrication industry problem of damage in transit from shop application to the field, and how important product durability is. Several ASTM tests address the issues of most concern, notably, ASTM D4060, Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser, where a smaller wear index (0.1894) indicates greater abrasion resistance; ASTM D968, Standard Test Method for Abrasion Resistance of Organic Coatings by Falling Abrasive, where a larger volume of sand (16.4L/mil) indicates greater abrasion resistance; and ASTM D3363, Standard Test Method for Film Hardness by Pencil Test where this test method determines film hardness on a rating from 6B (softest) to 6H (very hard).

Enhanced Shop Coating Properties - Faster Throughput

Sherwin-Williams understands the importance of faster throughput and the mandates in managing VOC’s. Heat-Flex® Hi-Temp 1200 provides lower VOC’s, faster recoat times and faster dry to touch, saving you time and money.
Global reach, local services
Sherwin-Williams is a single source coatings supplier to the global oil and gas market with a comprehensive product line and a track record of extending lifecycles and improving corrosion resistance. With operations dating back almost 150 years, the company continues to pioneer the development and commercialization of single coat rapid cure tank linings, edge retentive coatings, surface tolerant coatings and the world’s leading passive fire protection coatings for hydrocarbon environments.

Sherwin-Williams is a global integrated supplier of protective coatings serving the broad spectrum needs of the oil & gas industry. But we go beyond simply delivering the bucket of paint. A hallmark of the company’s philosophy is our integrated supply chain. It is set up to provide quality, value, technical service and logistical support unmatched by any other coatings company. From 4,000 company-owned distribution points, we deliver products to the site on a just-in-time basis, ready for application.

Just as importantly, all products are manufactured in factories that are wholly owned by Sherwin-Williams. One central Protective & Marine Coatings control lab manages all product formulas globally. For quality control purposes, products must conform to relevant fingerprint matching as represented by an infrared scan. This ensures products are performance and formulation equals.

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